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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/818,972	03/27/2001	Katsuhisa Yuda	GOM-02001	9306

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EXAMINER	
CROWELL, ANNA M	

ART UNIT	PAPER NUMBER
1763	

DATE MAILED: 02/05/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/818,972	YUDA ET AL.	
	Examiner	Art Unit	
	Michelle Crowell	1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 November 2003*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) *1-6 and 13-14* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *7-12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hatanaka et al. (U.S. 5,962,083) in view of Felts et al. (U.S. 5,364,665).

Referring to Figure 1 and column 3, line 15 – column 5, line 13, Hatanaka et al. discloses a plasma CVD apparatus for forming a silicon oxide film on a substrate comprising: a plasma generating region 1 which forms plasma of a first gas containing oxygen atoms (col. 3, lines 18-29, line 55); a deposition region 4 which is placed on the substrate 7 so as to be separated from the plasma generating region (Fig. 1, col. 3, line 26); a grounded barrier 14 disposed between the plasma generating region and the deposition region (Fig. 1, col. 3, line 57-col. 4, line 41, esp. col.

4, lines 28-30); a substrate holding mechanism 7a disposed in the deposition region (Fig. 1); a supply unit 6 which supplies second gas containing silicon atoms into the deposition region (col. 3, lines 30-45); and a control unit 24, 25 (Fig. 1, col. 5, line 12-13).

Hatanaka et al. fails to teach controlling a pressure of the deposition region

Referring to Figure 1 and column5, line 68-column 6, line 5, Felts et al. teaches a plasma processing apparatus having a control unit 27 for controlling the pressure 19 of the deposition region. It is well known in the art to control pressure in order to achieve the desired processing rate. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention for the control unit of Hatanaka et al. to control the pressure of the deposition region as taught by Felts et al. since this would achieve a desired processing rate.

Moreover, Hatanaka et al discloses a control unit 24, 25 comprises an optical emission spectrometer 22 which spectrally detects luminescence of the deposition region 4 (col. 5, lines 7-13).

Additionally, Hatanaka et al. discloses an optical transmitting window is arranged at the chamber wall, which is preferably placed in the deposition region, and the optical emission spectrometer 22 measures a light beam passing through the light transmitting window (Fig.1, col. 5, lines 7-13).

Furthermore, Hatanaka et al. recites the claimed gases; however, the type of gases, *a first gas containing oxygen atoms, a deposition region including excitation oxygen molecules and excitation oxygen atoms, and a second gas containing silicon atoms in the deposition region*, used in apparatus claims are considered intended use and therefore are of no significance in determining patentability. Expressions relating the apparatus to contents thereof during an

intended operation are of no significance in determining patentability of the apparatus claim. Ex parte Thibault,164 USPQ 666, 667 (Bd. App. 1969).

4. Claims 8-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hatanaka et al. (U.S. 5,962,083) in view of Felts et al. (U.S. 5,364,665) as applied to claim 7 above, and further in view of Soma (Japanese Patent Publication 2000-055733) and O'Rourke et al. (U.S. 5,953,118).

The teachings of Hatanaka et al. in view of Felts et al. have been discussed above.

Hatanaka et al. in view of Felts et al. fails to teach a multi-channel optical emission spectrometer which has a thermoelectric cooling CCD.

Referring to paragraph [0001], Soma teaches a multichannel spectrometer used for optical characteristic analysis of a material. Multichannel spectrometer are used to measure the luminous intensity of different wavelength to coincidence. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention for the spectrometer of Hatanaka et al. in view of Felts et al. to be a multichannel spectrometer as taught by Soma since it can measure the luminous intensity of different wavelength to coincidence.

Referring to column 6, lines 31-58 and column 8, lines 9-41, O'Rourke teaches a thermoelectric cooling CCD capable of exposure times from approximately 0.02 seconds to more than 30 seconds. Additionally, it is known in the art that CCD provide enhanced light sensitivities and that thermoelectric cooling provide the cooling necessary to prevent component warping, thereby increasing efficiency. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the multichannel spectrometer of Hatanaka

et al in view of Felts and Soma with a thermoelectric cooling CCD since enhanced exposure times, enhanced sensitivities, and cooling are achieved, thereby improving the efficiency and accuracy of the multichannel spectrometer.

Furthermore, the limitations of claims 10-12 are directed to method limitations instead of apparatus limitations and since an apparatus is being claimed as the instant invention, the method teachings are not considered to be the matter at hand, since a variety of methods can be done with the apparatus. The method limitations are viewed as intended uses which do not further limit, and therefore do not patentably distinguish the claimed invention. Furthermore, the apparatus of Hatanaka et al. in view of Felts et al., Soma, and O'Rourke et al. is capable of measuring the deposition region and controlling the deposition condition.

Additionally, with regard to limitation reciting the excitation oxygen molecule having a peak near 761 nm and the excitation oxygen atom having a peak near 777 nm, this limitation is considered simply a characteristic. Therefore, since no structure has been claimed, patentable weight has not been given to this limitation.

5. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Felts et al. (U.S. 5,364,665) in view of Ogawa et al. (U.S. 6,044,792) and Hatanaka et al. (U.S. 5,962,083).

Referring to Figures 1 and 2, and column 5, line 43 – column 6, line 48, Felts et al. discloses a plasma CVD apparatus for forming a silicon oxide film on a substrate comprising: a plasma generating region 11 which forms plasma of a first gas containing oxygen atoms (col. 5, lines 55-60); a deposition region 11 which is placed on the substrate 13; a substrate holding mechanism 32 which is provided with the substrate in the deposition region (Fig. 2); a supply

unit 15 which supplies second gas containing silicon atoms into the deposition region (col. 5, lines 55-60); and a control unit 27 which controls a pressure 19 of the deposition region (Fig. 1, col. 6, lines 13-20).

Felts et al. fails to teach the plasma generating region separated from the deposition region.

Referring to Figures 4, 8, 9, column 14, line 61 – column 15, line 52, and column 17, line 36-column 18, line 9, Ogawa et al teaches a plasma CVD apparatus in which the plasma generating region 27, 33 is separate from the deposition region 21. It is conventionally known in the art to separate a plasma generating region from a deposition region in order to prevent substrate damage. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to separate the plasma generating region from the deposition region of Felts et al. as taught by Ogawa et al. in order to prevent substrate damage.

Felts et al. fails to teach a grounded barrier disposed between the plasma generating region and the deposition region.

Referring to Fig. 1, col. 3, line 57-col. 4, line 41, Hatanaka et al. teaches a plasma processing apparatus having a grounded barrier 14 disposed between the plasma generating region and the deposition region to increase the film deposition rate (col. 4, lines 23-30, lines 40-41). Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the apparatus of Felts et al. in view of Ogawa et al. with a grounded barrier disposed between the plasma generating region and the deposition region since this would increase the film deposition rate.

Additionally, Felts et al. in view of Ogawa et al. discloses a control unit 27 comprises an optical emission spectrometer 21 which spectrally detects luminescence of the deposition region 11 (col. 6, lines 6-11).

Furthermore, Felts et al. in view of Ogawa et al. discloses an optical transmitting window 25 is arranged at the chamber wall, which is preferably placed in the deposition region, and the optical emission spectrometer 21 measures a light beam passing through the light transmitting window (Fig.1, col. 6, lines 6-17).

Moreover, Felts et al. recites the claimed gases; however, the type of gases, *a first gas containing oxygen atoms, a deposition region including excitation oxygen molecules and excitation oxygen atoms, and a second gas containing silicon atoms in the deposition region*, used in apparatus claims are considered intended use and therefore are of no significance in determining patentability. Expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining patentability of the apparatus claim. Ex parte Thibault,164 USPQ 666, 667 (Bd. App. 1969).

6. Claims 8-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Felts et al. (U.S. 5,364,665) in view of Ogawa et al. (U.S. 6,044,792) and Hatanaka et al. (U.S. 5,962,083) as applied to claim 7 above, and further in view of Soma (Japanese Patent Publication 2000-055733) and O'Rourke et al. (U.S. 5,953,118).

The teachings of Felts et al. in view of Ogawa et al. and Hatanaka et al. have been discussed above.

Felts et al. in view of Ogawa et al. and Hatanaka et al. fail to teach a multi-channel optical emission spectrometer which has a thermoelectric cooling CCD.

Referring to paragraph [0001], Soma teaches a multichannel spectrometer used for optical characteristic analysis of a material. Multichannel spectrometer are used to measure the luminous intensity of different wavelength to coincidence. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention for the spectrometer of Felts et al. in view of Ogawa et al. and Hatanaka et al. to be a multichannel spectrometer as taught by Soma since it can measure the luminous intensity of different wavelength to coincidence.

Referring to column 6, lines 31-58 and column 8, lines 9-41, O'Rourke teaches a thermoelectric cooling CCD capable of exposure times from approximately 0.02 seconds to more than 30 seconds. Additionally, it is known in the art that CCD provide enhanced light sensitivities and that thermoelectric cooling provide the cooling necessary to prevent component warping, thereby increasing efficiency. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the multichannel spectrometer of Felts et al. in view of Ogawa et al., Hatanaka et al. and Soma with a thermoelectric cooling CCD as taught by O'Rourke et al. since enhanced exposure times, enhanced sensitivities, and cooling are achieved, thereby improving the efficiency and accuracy of the multichannel spectrometer.

Additionally, the limitations of claims 10-12 are directed to method limitations instead of apparatus limitations and since an apparatus is being claimed as the instant invention, the method teachings are not considered to be the matter at hand, since a variety of methods can be done with the apparatus. The method limitations are viewed as intended uses which do not further limit, and therefore do no patentably distinguish the claimed invention. Furthermore, the

apparatus of Felts et al. in view of Ogawa et al. Hatanaka et al., Soma, and O'Rourke is capable of measuring the deposition region and controlling the deposition condition.

Furthermore, with regard to limitation reciting the excitation oxygen molecule having a peak near 761 nm and the excitation oxygen atom having a peak near 777 nm, this limitation is considered simply a characteristic. Therefore, since no structure has been claimed, patentable weight has not been given to this limitation.

Response to Arguments

7. Applicant's arguments filed November 14, 2002 have been fully considered but they are not persuasive.

Applicant has argued that Hatanaka et al. discloses that a silicon atom-containing feed gas is introduced upstream of a screen through which both the plasma and the gas pass, unlike applicant's invention. However, claim 7 does not preclude both the plasma and the gas passing through the grounded barrier. Additionally, Hatanaka et al. teaches that the grounded barrier 14 can be placed between the plasma generating region and the deposition region so that just the plasma passes through the grounded barrier 14 and then mixes with the second gas 6 (col. 4, lines 28-30). Thus, Hatanaka et al. in view of Felts et al. satisfies the claimed requirement.

8. Applicant's arguments with respect to the rejection of Felts et al. in view of Ogawa et al. have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michelle Crowell whose telephone number is (571) 272-1432. The examiner can normally be reached on M-F (8:00 - 4:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on (571) 272-1439. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Application/Control Number: 09/818,972
Art Unit: 1763

AMC
January 29, 2004

GREGORY MILLS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700